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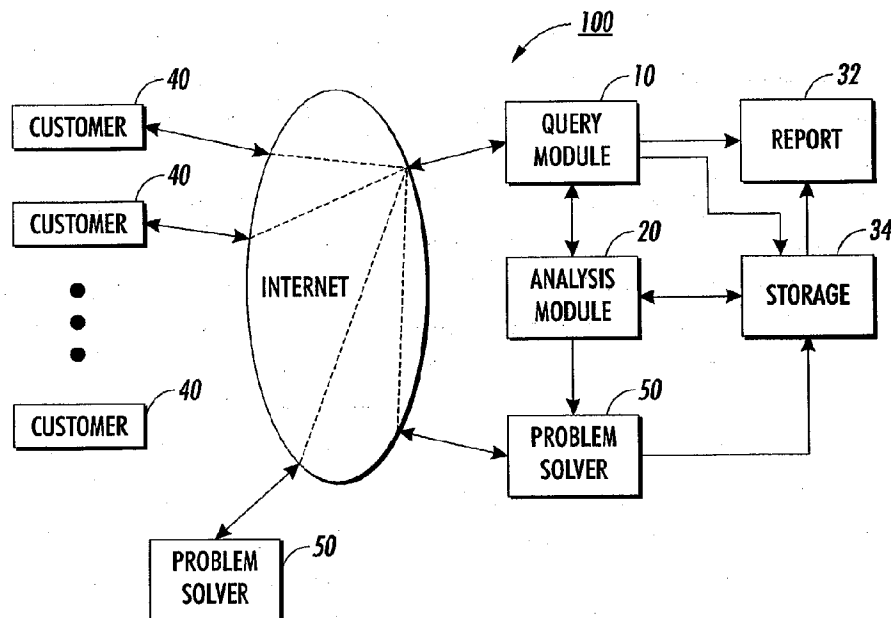
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(54) **Customer satisfaction system and method**

(57) A customer satisfaction system, includes a query module (10) for automatically sending queries to customers as to problems with goods or services provided by a provider according to a predetermined schedule and for receiving responses from customers to the queries; an analysis module (20) for analyzing responses from customers and for sending responses indicating

a problem to a problem solver for resolution; and at least one problem solver (50) for responding to customer problems, for generating solutions to customer problems and for transmitting solutions to customers; wherein, upon transmission of a solution to a customer problem to a customer, the query module (10) sends a query to the customer requesting verification that the problem has been solved.



**FIG. 1**

## Description

**[0001]** This invention relates generally to customer satisfaction systems and methods and more particularly to a customer satisfaction system and method which integrates customer satisfaction with problem resolution.

**[0002]** The goal of most customer satisfaction systems is to eliminate problems and thus ensure repeat business. A customer satisfaction system typically includes customer support and some sort of feedback technique to determine if the customer support is adequate. In the typical customer support model, a customer purchases goods or services from a provider. If there is a problem with the goods or services, the customer contacts a customer service representative who works to fix the problem. Customer service may be provided via telephone support (in which a representative helps the customer solve his problem directly), or via a network connection (such as the Internet or an intranet).

**[0003]** Network-based support typically involves posting a list of frequently asked questions ("faqs") and providing a form for the customer to use to request support if the list of faqs does not solve his problem. The request is then transmitted to a customer support representative. The request form usually includes fields where the customer can input data describing the problem. Some network-based support includes software which can collect data from the customer's system and transmits it to customer support. Providing customer support via a network connection is desirable because it reduces costs by reducing help desk traffic, it is global in reach and is relatively easy to access. However, network-based support is frequently not as satisfactory as a telephone-based help desk.

**[0004]** To measure how well customer support is solving customer problems, many customer satisfaction systems rely on surveys. In some cases, a follow-up survey will be sent to the customer after the completion of a service call. Frequently, only a small percentage of customers respond, so customer service does not know if, and how well, all of the customer problems were resolved. In other cases, a generalized marketing survey may be sent to all customers in a certain demographic.

**[0005]** Generalized customer satisfaction marketing surveys, like most surveys, also suffer from limited customer response. Marketing surveys also generally report evaluations without specific indications for improvement, and follow a "measure and report" sequence that frequently results in delayed improvements to solve general problems identified, if any. Consequently, customers with unique or urgent problems become dissatisfied and disloyal, resulting in profit declines. Other problems with current customer satisfaction systems include: biased samples, delayed remedies, nominal guidance, constrained learning, limited usage, high costs, questionable value.

**[0006]** A customer problem is the difference between the customer's expectation and the provider's or the

product's performance. Total customer satisfaction can be achieved by the elimination of customer problems. A method for ensuring customer satisfaction, includes automatically sending, according to a predetermined schedule, a query to a customer as to problems with goods or services provided by a provider to the customer, receiving a response from a customer to the query, analyzing the response received from the customer to determine if the customer has a problem, if the response indicates the customer has a problem, generating a solution to the problem, transmitting the solution to the customer and sending a query to the customer requesting verification that the problem has been solved by the solution.

**[0007]** A customer satisfaction system, according to the invention, includes a query module for automatically sending queries to customers as to problems with goods or services provided by a provider according to a predetermined schedule and for receiving responses from customers to the queries; an analysis module for analyzing responses from customers and for sending responses indicating a problem to a problem solver for resolution; and at least one problem solver for responding to customer problems, for generating solutions to customer problems and for transmitting solutions to customers; wherein, upon transmission of a solution to a customer problem to a customer, the query module sends a query to the customer requesting verification that the problem has been solved.

**[0008]** Any means of communication may be used to send queries, responses, solutions, verification. In one embodiment, email is used. Email is ubiquitous and instantaneous; email may be sent over the Internet or a local intranet. Queries are sent on a predetermined schedule to customers. All customers may receive queries. The predetermined schedule may be once a month, once a week, or any other appropriate time interval with follow-ups for verification that a problem has been solved being sent more frequently, on the same schedule or according to any other schedule. By using a frequent query (which may be an online survey or an offline survey) of all customers of a particular demographic, the customer satisfaction method follows a "sense and respond" sequence, immediately conveying specific problems of individual customers to designated problem solvers until the customers confirm the problems are solved, then reporting problems conveyed along with solutions implemented. Customer satisfaction is assured as well as measured, supporting profits and organizational learning.

**[0009]** An example of a system and method according to the present invention will now be described with reference to the accompanying drawings, in which:-

Figure 1 is a block diagram of a customer satisfaction system;

Figure 2 is a block diagram illustrating a method of providing customer satisfaction;

Figure 3 is an exemplary query sent via email to a customer;

Figure 4 is an exemplary entrance screen to a customer satisfaction system;

Figure 5 is an exemplary customer survey screen;

Figure 6 is an exemplary thank you page;

Figure 7 is an exemplary notification to a problem solver;

Figure 8 is an exemplary login page for a problem solver;

Figure 9 is an exemplary problem solver entrance screen; and

Figures 10 and 11 are an exemplary problem solver ticket update page.

**[0010]** A customer problem is the difference between the customer's expectation and the provider's or the product's performance. Total customer satisfaction can be achieved by the elimination of customer problems. An exemplary customer satisfaction system is shown in Fig. 1 and referred to by reference numeral 100. System 100 includes query module 10, analysis module 20, storage 34, report generating module 32, and one or more problem solvers 50. In this embodiment, the customer satisfaction system 100 communicates with customers 40 via the Internet. Alternatively, the customer satisfaction system 100 could be installed on a local intranet, for example, if a business unit such as the information technology group wished to measure satisfaction of its internal corporate customers. In system 100, query module 10 communicates with customers using email.

**[0011]** Query module 10 automatically sends out queries in the form of an email to customers according to a predetermined schedule. The predetermined schedule may be any period, such as weekly (for new accounts), monthly (for established accounts), every fifteen days, etc. The query asks the customer if they have any problems. Query module 10 receives responses from customers which are then sent to the analysis module 20. Analysis module 20 determines if a customer has a problem. If the customer has a problem, the analysis module 20 sends the problem to an appropriate problem solver 50. The problem solver is responsible for finding a solution to the customer's problem. The problem solver may be requested to commit to a particular date for problem solution, which date may be transmitted to the customer. When the problem solver 50 has a solution, the problem solver sends the solution to the analysis module 20, which records the solution and time of completion. The analysis module 20 then sends the solution to the query module 10 which sends it to the customer. Alternatively, the problem solver 50 could transmit the solution directly to the customer 40, with a copy to the analysis module 20 for tracking.

**[0012]** The analysis module 20 schedules a follow up to be sent by the query module 10 to the customer 40 to verify that the solution has been sent if the problem solver 50 transmitted it directly and if the solution solved

the customer's problem. If the customer responds that the problem has not been solved or portions still remain unsolved, the query module 10 forwards the follow up response to the analysis module 20, which forwards it to the problem solver for further solution. The customer satisfaction system may be implemented using standard helpdesk type software, uniquely modified to periodically contact product or service users, gather, record, and route problems immediately to designated problem solvers, register their commitment to a solution date, confirm their solution on that date; and then verify solution with the user reporting the problem.

**[0013]** System 100 includes storage 34 for storing a record of all queries, customer responses, solutions, follow up, verifications and any other information appropriate to the customer. From storage 34, system 100 can generate reports in report generator 32 of customer problems, solutions, time of resolution and other information pertinent to the customer. Information stored in storage 34 can be used by other organizations in the provider. For example, an engineering group could search the problems in storage 34 for similarities, identifying possible problems in a particular area of the product. Management could use the stored information to verify that problem solvers are working effectively, to identify needs for new or different types of problem solvers.

**[0014]** A method of ensuring customer satisfaction is shown in Fig. 2. In step 202, an account representative or owner contacts the customer to ask if the customer wants to participate in the customer satisfaction system. Depending on the owner of the customer satisfaction system, participation may be voluntary or not. In step 204, the customer must provide an email address where he/she may be contacted. In step 206, the provider sends an email survey to the customer. It is anticipated that in most cases, all customers will be sent email surveys. Fig. 3 is an exemplary initial email survey. This survey provides a simple yes or no response (by clicking the on the face icons). If the customer clicks on the no problems icon, that response is sent to the provider (step 212) and a thank you screen is presented to the customer (see Fig. 6).

**[0015]** The email survey shown in Fig. 3 has html links so that the customer can go directly to online help, by clicking the <http://www.heyxerox.com> link. If the customer has a problem and clicks on the problems icon, the customer is presented with a welcome screen as shown in Fig. 4. Alternatively, if the customer clicks on the <http://www.heyxerox.com> link, the same screen may be presented. This link may be used by the customer at any time, not just in response to a query (step 210). The customer clicks on the "Click here to tell Xerox about your problem" link and the survey form shown in Fig. 5 is displayed. This survey requests the customer to fill out information: name, address, email, account number, category of problem, make/model of product, severity of problem and a description in the customer's own words

of the problem. When the customer completes the form and clicks on the ok button, the thank you screen (Fig. 6) is displayed.

**[0016]** In step 214, the customer's problem is routed via email to a problem solver. Fig. 7 is an exemplary email transmitting a customer problem to a designated problem solver, which contains the date and description of the customer's problem. When the problem solver solves the problem, the problem is reported (step 216) both to the user and to the provider. In step 218 the solution is verified by the customer.

**[0017]** Most problem solvers will have many problems on their "docket" to solve. To facilitate communication and follow up on the customer satisfaction system, each problem solver is provided with an online account in which the system and problem solver can track progress on solutions. When a problem solver enters the system, an opening screen, such as shown on Fig. 8, is displayed. The problem solver must enter a login name and password. After clicking on the ok button, a problem solver entrance page is displayed as shown in Fig. 9. This page lists the number of tickets (i.e., customer problems) outstanding as well as other administrative items. For example, a search box is provided so the problem solver can search for various items, such as tickets having the same keyword, call up a particular ticket, etc.

**[0018]** Figs. 10 and 11 show a problem solver ticket update page for the problem reported in Fig. 5. This update page provide fields for the problem solver to track the problem, its progress, internal analysis, history of correspondence, etc. When the problem solver receives a new problem, a problem solver ticket is created. When the problem solver has solved the problem, he will enter the system and click yes to problem solved. This will generate an email to the customer stating that original problem, the problem solver's solution and asking if the problem is now solved, yes or no. If the customer responds yes, the ticket is closed. If the customer responds no, the system will generate a new ticket with all the previous information attached and sends the ticket to the problem solver.

**[0019]** Referring again to Fig. 2, when customer surveys are received (step 214), these surveys can be used by the service or product provider for various purposes. The surveys may be used, for example, as an input to another system of information generation. For example, the customer surveys can be sent to a pattern recognition system 230 which can be used to select the particular problem solver to send the problem. However, the pattern recognition system can also use the customer survey information as input to a policy management system 250, which provides input to a bonus system 252 and to a business policy adoption system 240. Account activity files 232 can also be used as input to the pattern recognition system 230. Survey information can also be input to a customer relations management (CRM) database 324, a problem reporting system 236 and a custom

reporting system 238.

**[0020]** The customer satisfaction system ensures customer satisfaction by first identifying problems, solving the customer problems and having the customer verify that the problem has been solved. In addition to providing customer satisfaction, the customer satisfaction system offers the product and service provider a large amount of data which can be used to further the provider's business. Information outputs of the customer satisfaction system can be used to generate summary indexes of satisfaction; problem prevalence and profiling; problem solver performance; problem clustering. For example, summary indexes of problems can be compared by problem type, by account, by entity, by product. Problem solver performance can be compared (e.g., the percentage of reported problems solved by each problem solver). Problems can be analyzed for prevalence based on problem characteristics. Additionally, the information from the customer satisfaction system can be used for problem valuation; solution validation; pattern insights. For example, solution validation can be used to determine the average revenue among accounts reporting problems solved. It is anticipated that with problems being solved, revenue would increase due to increased customer satisfaction.

**[0021]** Solutions to problems may be logged and analyzed for organizational learning. A direct link may be made from the customer to the account team without any filters. The account team will be able to have a direct effect on customer satisfaction. The customer satisfaction system ensures satisfied customers; generates learning through direct contact; fosters revenue; encourages use of the information; maximizes the value of the information; minimizes costs through automation, enhances the provider's image, and provide renewed employee (provider) morale.

**[0022]** Periodically, customers are surveyed and asked if they have any problems with the sponsoring vendor. If not, they are recorded as satisfied. If no, they are asked to openly describe their problem. Each problem description is then conveyed to a designated problem solver, who responds until the problem is reported solved by the customer in a follow-up survey. Conveyed problems and specified solutions are then reported by the system to the product or service provides, on a standard or customized basis. Recurring patterns may be recognized to suggest fundamental policy improvements.

**[0023]** Problems may be codes as to type (and other categories). Both problems and customer responses may be analyzed by a pattern recognition system (such as one employing a neural net model) to suggest proven solutions to problem solvers, and to identify patterns that should suggest preventative improvements in fundamental policies; procedures; organizational actions; technology investments; marketing strategies; etc.

**[0024]** The customer satisfaction system provides the unique ability to materially prove to customers its deter-

mination to ensure any reported problems will be documented and resolved rapidly, consistently, and systematically to their satisfaction; and that recurring problems will be recognized and eliminated by prevention. This unique ability should increase customer confidence in the provider, loyalty to the provider and resulting in improved profits for the provider.

## Claims

### 1. A customer satisfaction system, comprising:

a query module (10) for automatically sending queries to customers (40) as to problems with goods or services provided by a provider according to a predetermined schedule and for receiving responses from customers to the queries;

an analysis module (20) for analyzing responses from customers and for sending responses indicating a problem to a problem solver (50) for resolution; and

at least one problem solver (50) for responding to customer problems, for generating solutions to customer problems and for transmitting solutions to customers;

wherein, upon transmission of a solution to a customer problem to a customer (40), the query module (10) is adapted to send a query to the customer requesting verification that the problem has been solved.

2. The system of claim 1, further comprising a memory (34) for storing a copy of each query sent, response received, problem identified and solution generated.

3. The system of claim 1 or claim 2, further comprising a report generator module (32) for generating a report of queries sent, responses received, problems identified and solutions generated.

4. The system of claim 3, wherein the report generator module (32) includes a problem reporting module and a customer relationship management database.

5. The system of any of the preceding claims, wherein the query module (10) sends queries via e-mail and receives responses via e-mail.

6. The system of any of the preceding claims, wherein the analysis module (20) includes a pattern recognition system for analyzing customer problems.

7. A method for ensuring customer satisfaction, com-

prising:

automatically sending, according to a predetermined schedule, a query to a customer as to problems with goods or services provided by a provider to the customer;

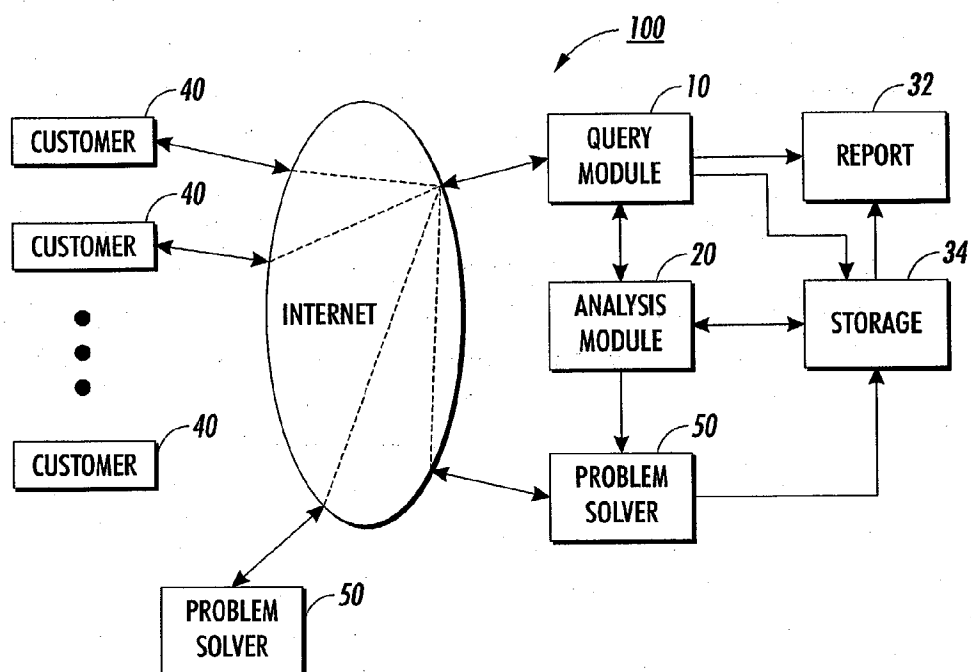
receiving a response from a customer to the query;

analyzing the response received from the customer to determine if the customer has a problem;

if the response indicates the customer has a problem, generating a solution to the problem; transmitting the solution to the customer; and sending a query to the customer requesting verification that the problem has been solved by the solution.

8. The method of claim 7, further comprising: directing the response to a problem solver (50) for problem solving.

9. The method of claim 7 or claim 8, further comprising storing a copy of each query sent, response received, problem identified and solution generated.



**FIG. 1**

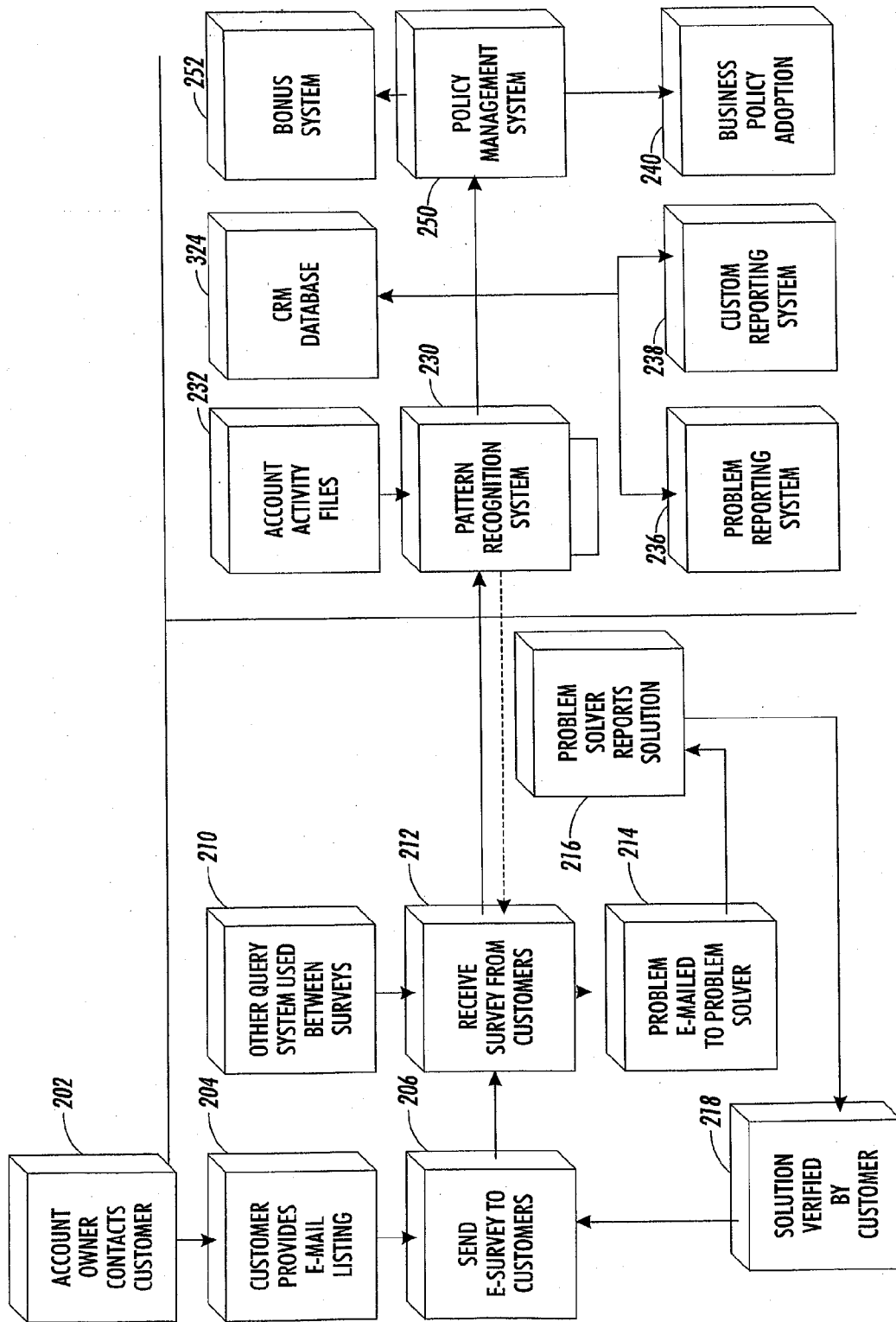
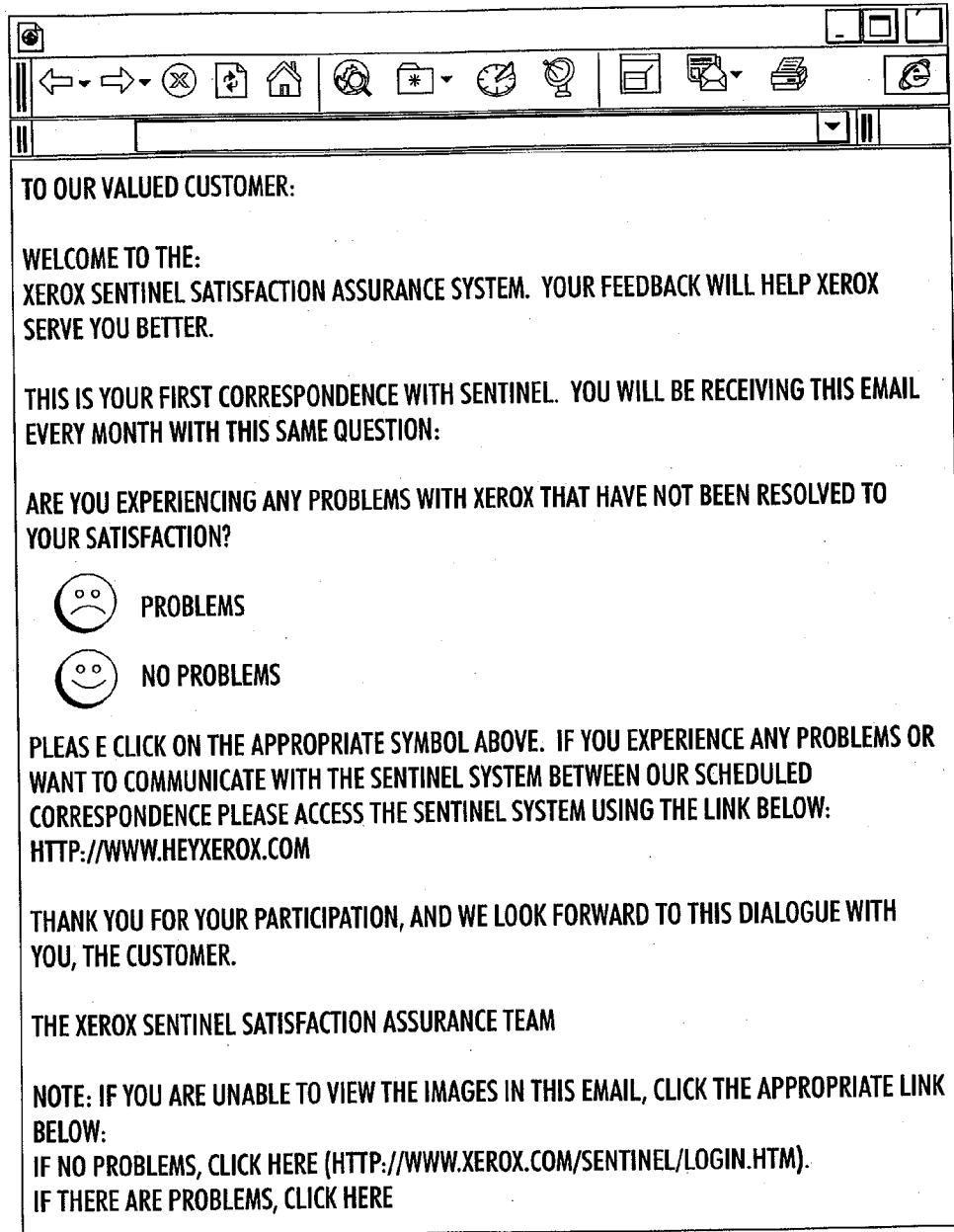
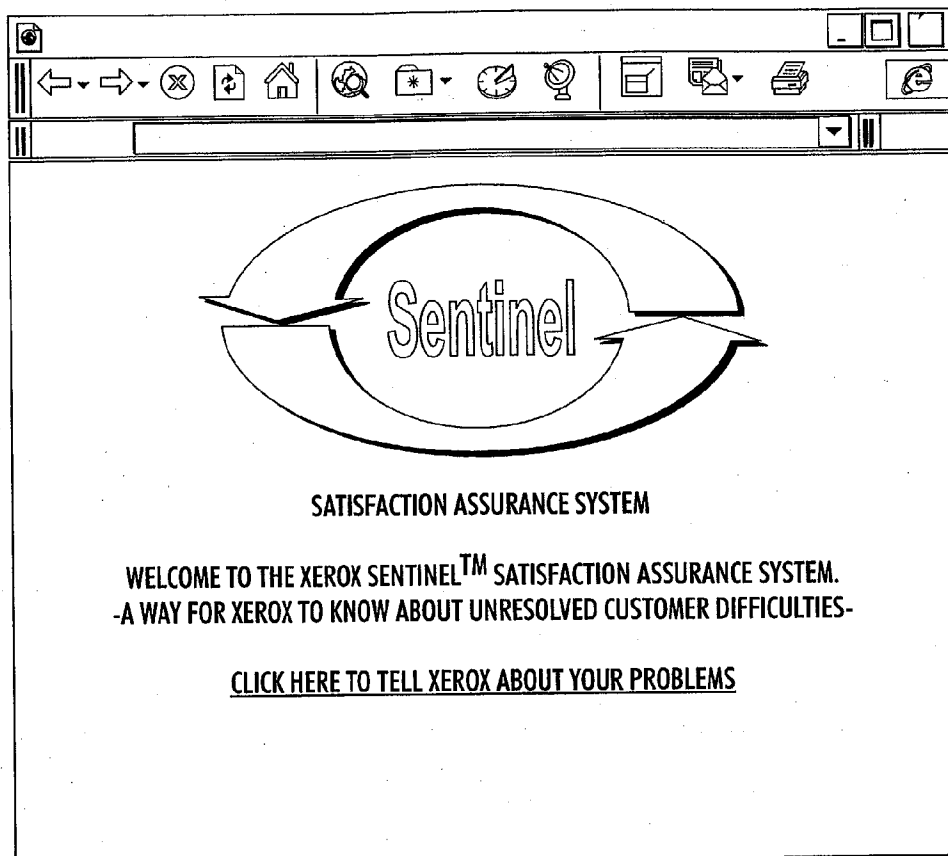


FIG. 2

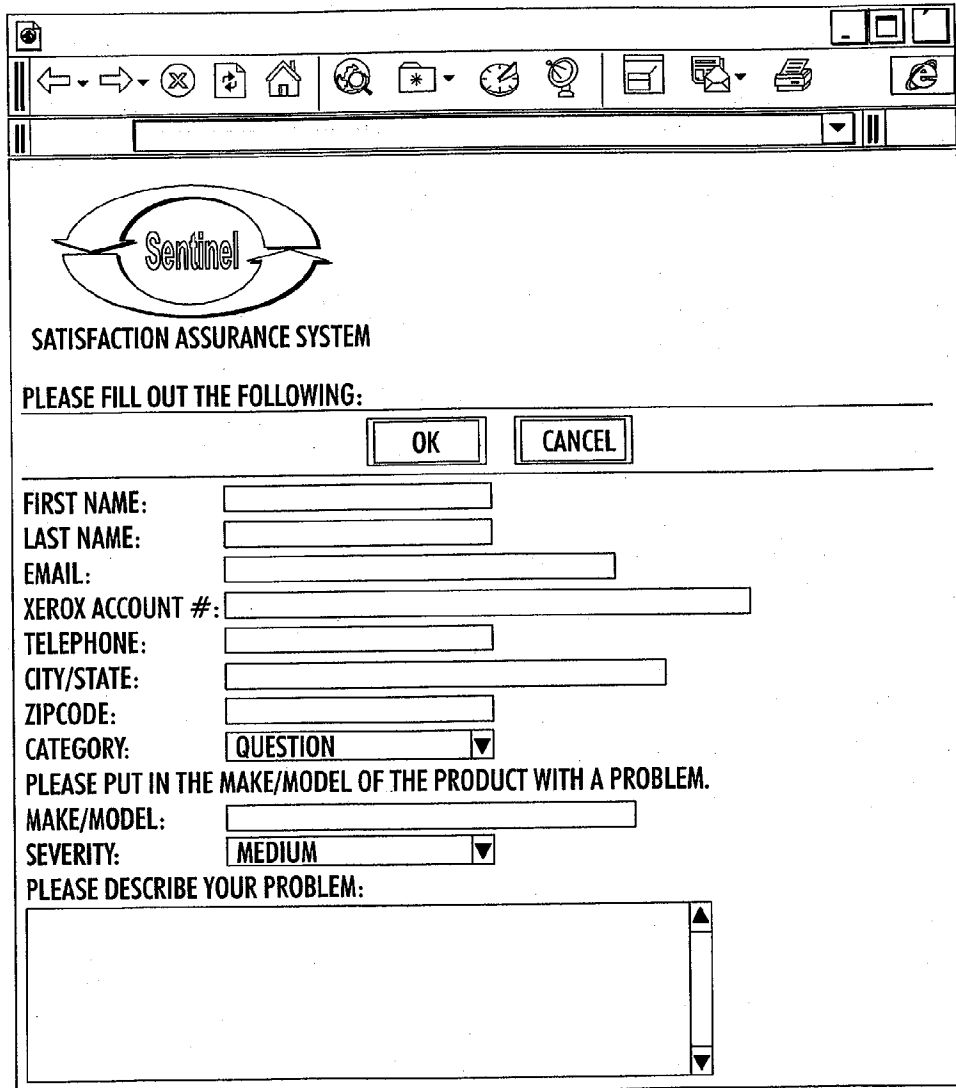


**FIG. 3**





**FIG. 4**



**Sentinel**

**SATISFACTION ASSURANCE SYSTEM**

PLEASE FILL OUT THE FOLLOWING:

OK CANCEL

FIRST NAME:

LAST NAME:

EMAIL:

XEROX ACCOUNT #:

TELEPHONE:

CITY/STATE:

ZIPCODE:

CATEGORY:

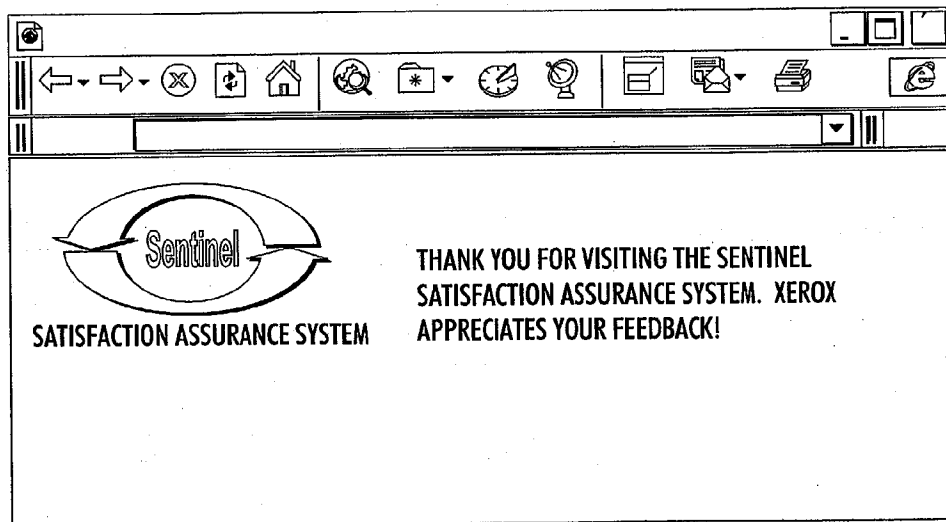
PLEASE PUT IN THE MAKE/MODEL OF THE PRODUCT WITH A PROBLEM.

MAKE/MODEL:

SEVERITY:

PLEASE DESCRIBE YOUR PROBLEM:

**FIG. 5**



**FIG. 6**

WHO	DATE	SUBJECT
CALCIUM@BBS.XBRG.COM	01:44 PM 8/19/2001	CALCIUM EVENT ADDED
CALCIUM@BBS.XBRG.COM	01:44 PM 8/19/2001	SENTINEL NOTIFICATION
CALCIUM@BBS.XBRG.COM	02:51 PM 8/19/2001	CALCIUM EVENT MODIFIED

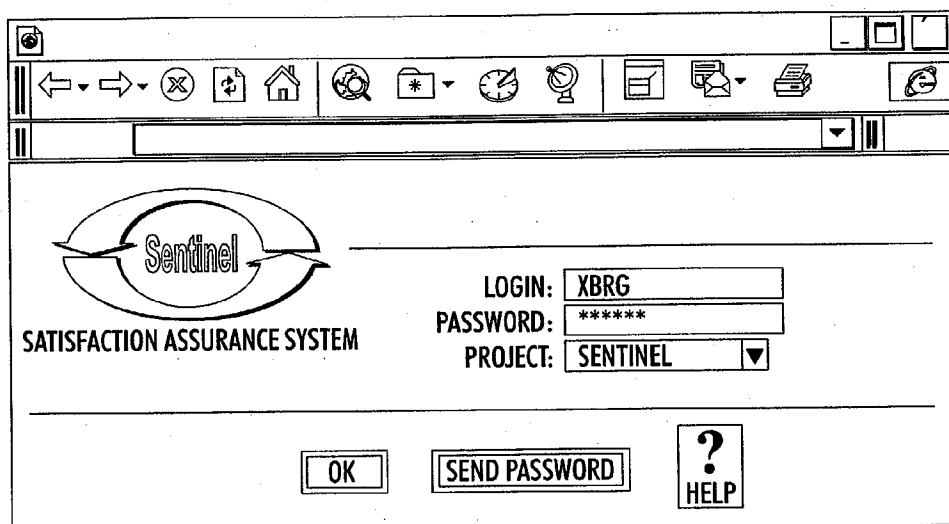
**SUBJECT: SENTINEL NOTIFICATION**

THE STATE OF 22 IS ASSIGNED  
TICKETID:22  
DATE: 21 AUG 2001 14:18:11.000  
FIRST NAME: SALLY  
LAST NAME: HOOPER  
E-MAIL: SALLYHPR@EARTHLINK.NET  
XEROX ACCOUNT #: 12345678WZWXSWESXDERLWIOLSDF  
TELEPHONE: 310 555-8843  
CITY/STATE: LA CA  
ZIPCODE: 90040  
SUMMARY: TEST  
DESCRIPTION:  
THIS IS A TEST PROBLEM

**DESCRIPTION**

SEVERITY: LOW  
ASSIGNED TO: IBRC  
ASSIGN DATE: 21 AUG 2001 14:18:11  
-----

FIG. 7



The image shows a web browser window with a standard toolbar at the top. The main content area displays the 'Sentinel' logo, which consists of the word 'Sentinel' inside an oval with two curved lines extending from the sides. Below the logo is the text 'SATISFACTION ASSURANCE SYSTEM'. To the right of the logo, there are three input fields: 'LOGIN:' with the value 'XBRG', 'PASSWORD:' with the value '\*\*\*\*\*', and 'PROJECT:' with a dropdown menu showing 'SENTINEL'. At the bottom of the form, there are three buttons: 'OK', 'SEND PASSWORD', and a 'HELP' button represented by a question mark icon.

**FIG. 8**

-TICKET-▼ -MANAGE-▼ -ADMIN-▼ ? HELP NOVICE IN BOX

DISPLAY UPDATE EXIT

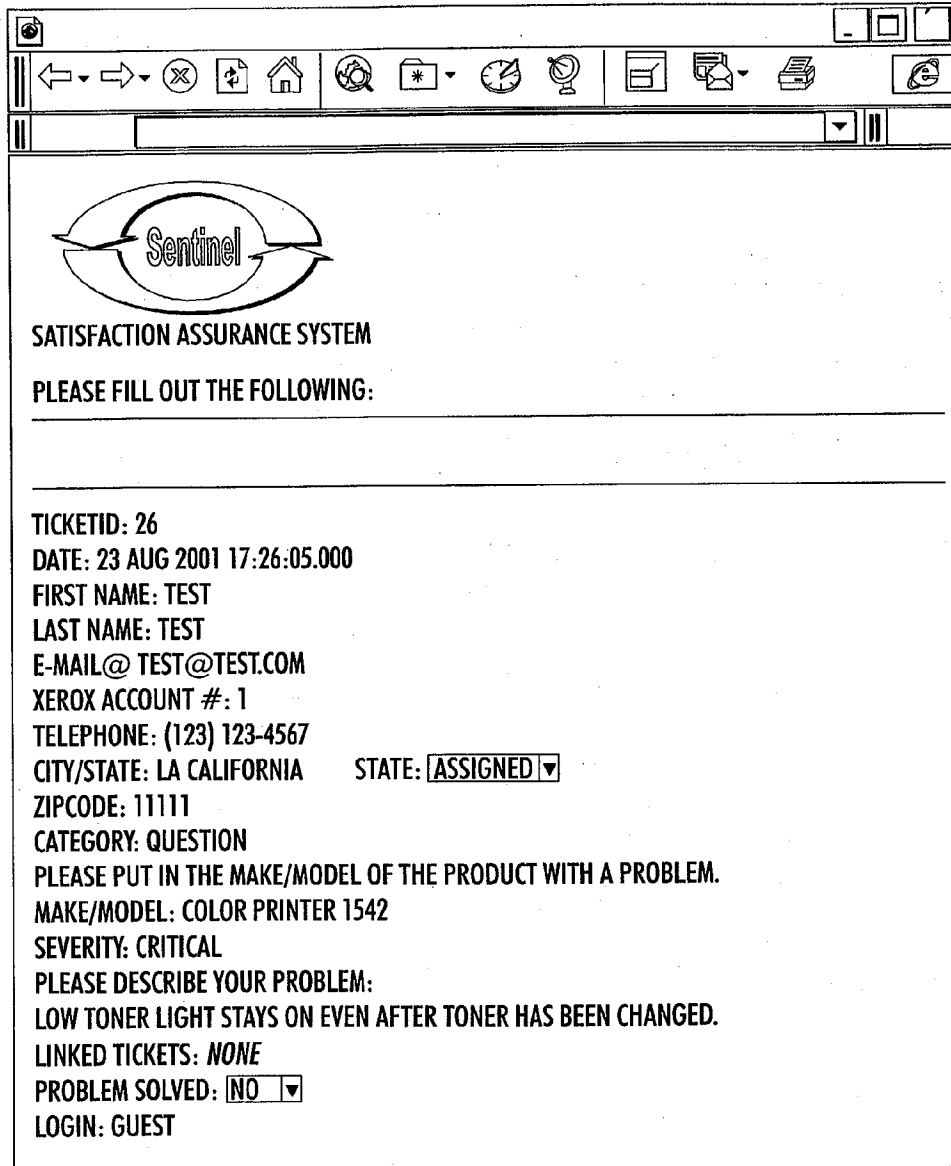
PAGE: 1 FILTER: NONE

<input type="radio"/>	24	E
<input type="radio"/>	25	E
<input checked="" type="radio"/>	26	E

TICKETS

N - NOT ALLOWED TO VIEW FIELD E - EMPTY FIELD  
PAGE: 1

FIG. 9



**Sentinel**

**SATISFACTION ASSURANCE SYSTEM**

**PLEASE FILL OUT THE FOLLOWING:**

---

TICKETID: 26  
 DATE: 23 AUG 2001 17:26:05.000  
 FIRST NAME: TEST  
 LAST NAME: TEST  
 E-MAIL@ TEST@TEST.COM  
 XEROX ACCOUNT #: 1  
 TELEPHONE: (123) 123-4567  
 CITY/STATE: LA CALIFORNIA      STATE:

ZIPCODE: 11111  
 CATEGORY: QUESTION  
 PLEASE PUT IN THE MAKE/MODEL OF THE PRODUCT WITH A PROBLEM.  
 MAKE/MODEL: COLOR PRINTER 1542  
 SEVERITY: CRITICAL  
 PLEASE DESCRIBE YOUR PROBLEM:  
 LOW TONER LIGHT STAYS ON EVEN AFTER TONER HAS BEEN CHANGED.  
 LINKED TICKETS: NONE  
 PROBLEM SOLVED:    
 LOGIN: GUEST

**FIG. 10**

The screenshot shows a software window with a standard Windows-style title bar and menu bar. The main content area is titled "INTERNAL ANALYSIS:" and contains a large empty text box. Below this, the following information is displayed:

- ASSIGNED TO: IBRC
- STANDARD SOLUTION: YES NO
- PUBLISHED: YES NO
- CREATOR E-MAIL: *NONE*
- MODIFIED BY: GUEST
- MODIFICATION DATE: 23 AUG 2001 17:26:05.000
- HISTORY:
- CREATED BY USER GUEST ON 23 AUG 2001 17:26:05.000

---

E-MAIL HISTORY:  
E-MAIL SENT ON 23 AUG 2001 17:26:06 BY GUEST TO:  
USER IBRC, USER ADMIN, TEST@TEST.COM

MESSAGE TEXT SENT:  
THE STATE OF 26 IS ASSIGNED

---

At the bottom of the window, there are five buttons: OK, CANCEL, CREATE ANOTHER, ROUTE BACK, and ROUTE FORWARD.

**FIG. 11**